

OTT AI Soundbar Test Proposal

2020.9.15

Version	Change	Owner	Date
V0	Initial	Stanley Wong	2020.8.18
V01	Change MIC from 2 to 4	Stanley Wong	2020.8.20
V02	Change audio test board from NI to custom made	Stanley Wong	2020.8.26
V03	Change audio chamber from automatic to manual, change MIC & mouth simulator QTY	Stanley Wong	2020.9.10
V04	Change acoustic dimensions	Stanley Wong	2020.9.15

1, Assumption

2, Audio Test Proposal (MIC & Speaker Test)

3, Acoustic Chamber Description

Assumptions

- Assuming 6 SPK + 4 MIC to be tested
- Assuming that the speaker of the product can be controlled by the computer to produce sound, assuming that each speaker and MIC of the product can be controlled separately.
- The proposal will use 1 share mouth simulator to test 4 MIC and use 2 MIC to test 6 SPK, the audio signal will be difference to each MIC and speaker, the test results probably will be difference with product specification, the test limits definition will base on the GRR & CPK data from golden samples test results.
- Audio chamber will operate manually.

Audio Test Proposal Microphone & Speaker Test

Test Structure Proposal

Test Coverage

- MIC frequency response
- MIC Harmonic Distortion
- SPK frequency response
- SPK Harmonic Distortion
- SPK Rub & Buzz
- SPK R/L Balance
- MIC sensitivity
- MIC Balance

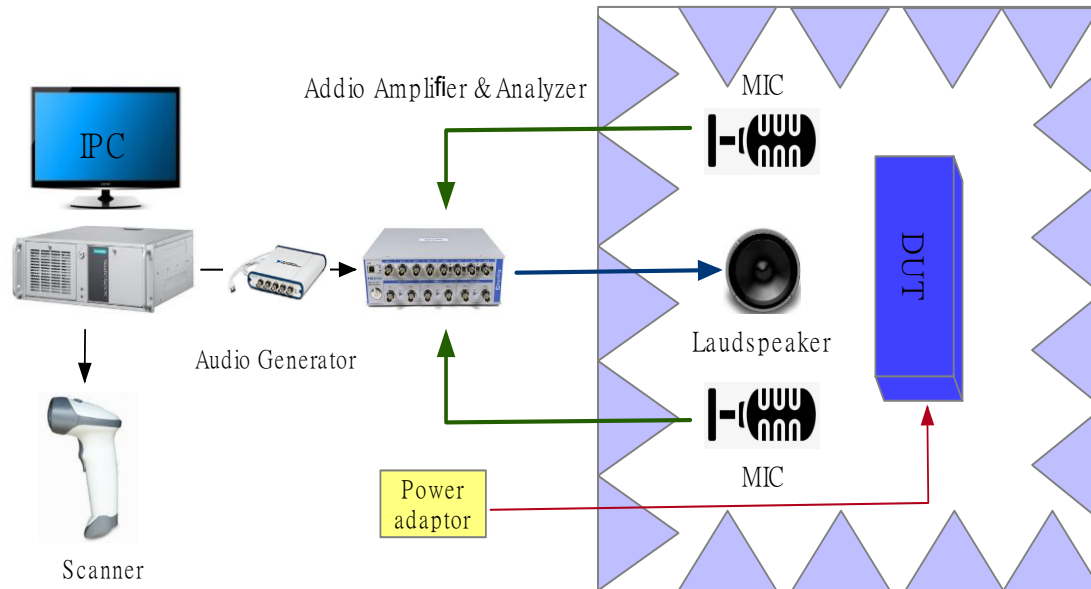
Proposed Test Equipment

- IPC with monitor, Keyboard & Mouse
- barcode scanner – Honeywell 1900
- DC Power adaptor –Customer consign
- Audio Generator – NI USB-4431
- Loudspeaker -- Customize
- Audio amplifier & Analyzer – MegaSig PM 6143
- MIC – GRAS 40 pp * 2
- Acoustic Chamber
- Test Fixture
- Test Control PCBA

Test Software

- Labview
- NI Sound & Vibration Toolkit

Test System Diagram



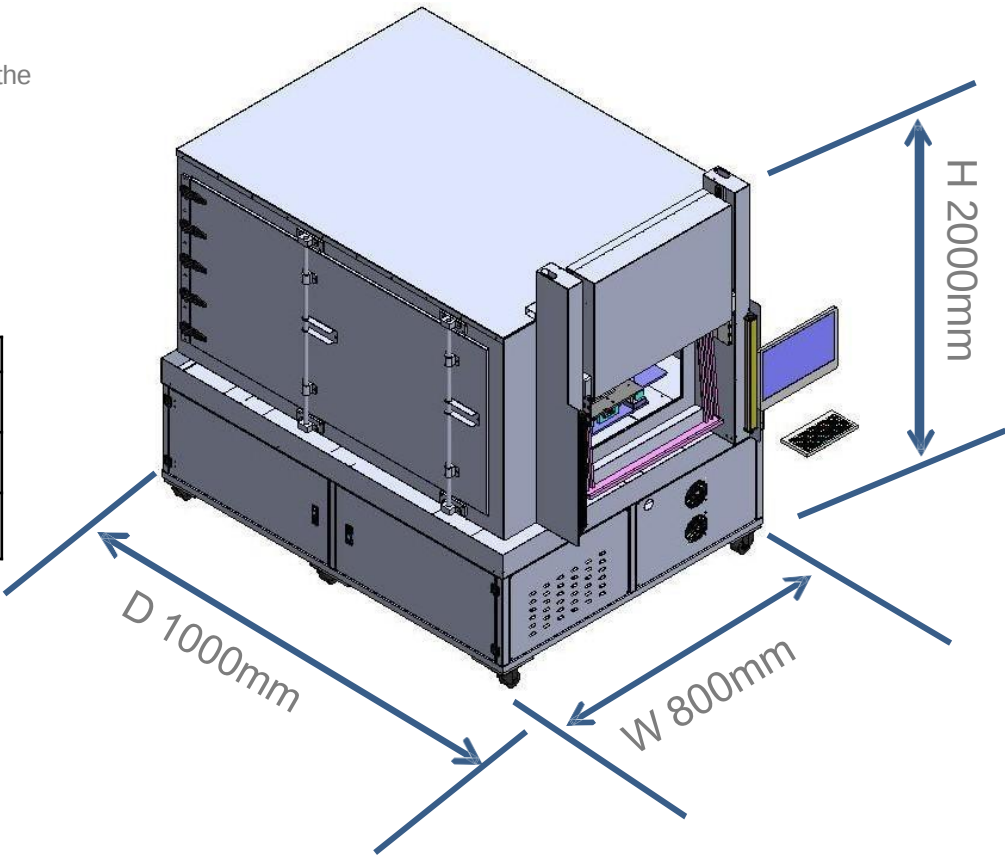
Acoustic Chamber Description

The chamber described is for reference only, the dimensions and isolation level will be the same but will change to manual operation from full automatic.

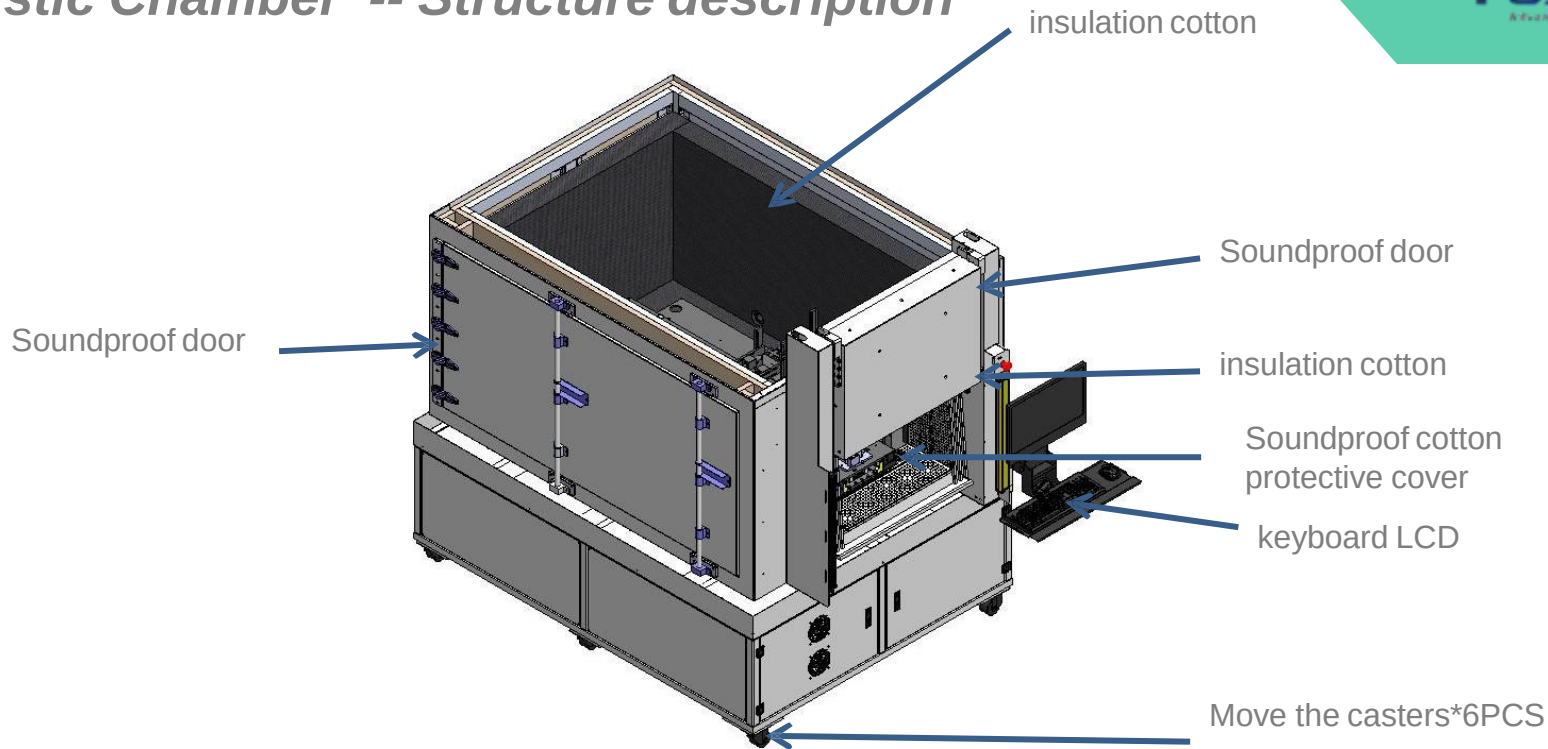
Acoustic Chamber Spec. Description

- 1.Total outer size of equipment: W1000mm x D800mm x H2000mm
- 2.Empty space inside the box: W800mm x D600m x H745m
- 3.Material : Steel 2mm High density board + soundproof cotton
- 4.Surface Finish : Epoxy Powdered Coating(Customizable according to the customer)Power Input : 220V
- 5.Weight : about 800Kg
- 6.Opening mode of shielding : manual operation Isolation Effect

Sound insulation						
Frequency	20Hz	100Hz	500Hz	1KHz	10KHz	24KHz
Test Sound source	94dB	94dB	94dB	94dB	94dB	94dB
Sound insulation effect	≥30dB	≥40dB	≥40dB	≥50dB	≥50dB	≥50dB

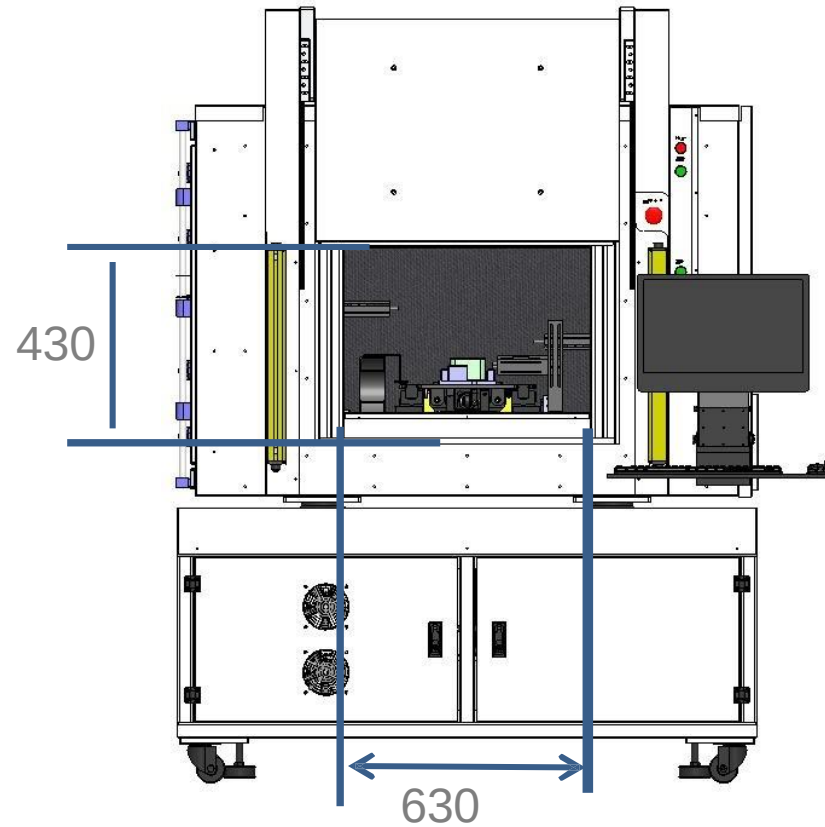


Acoustic Chamber -- Structure description



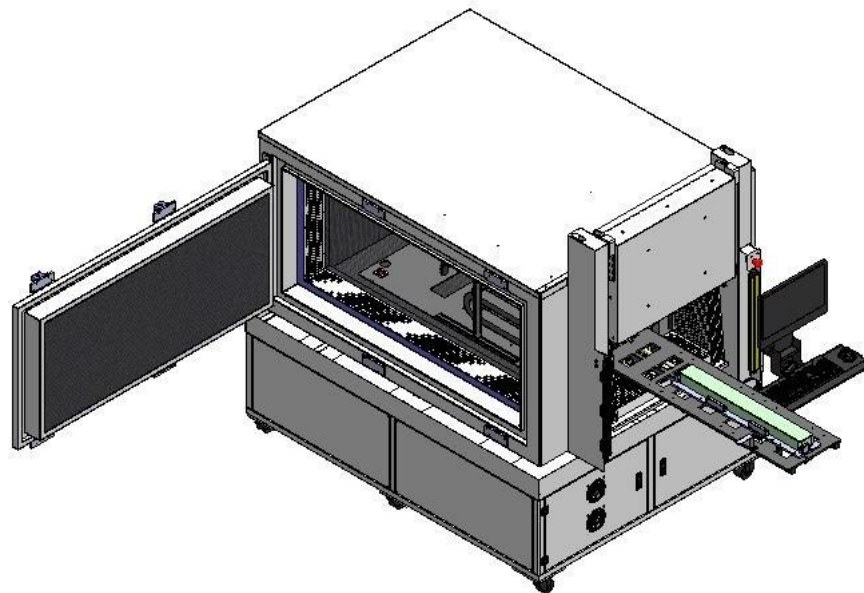
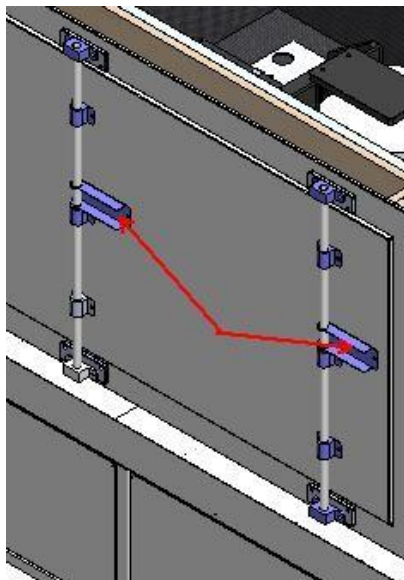
1. The sound-proof cotton on the door is pointed the
2. Add protective cover around the sound insulation cotton of the door panel.
3. Add mobile casters at the bottom of the audio test equipment.
4. The protective cover of the soundproof cotton on the door panel is completely surrounded by the opening.

Acoustic Chamber – Manual Operation



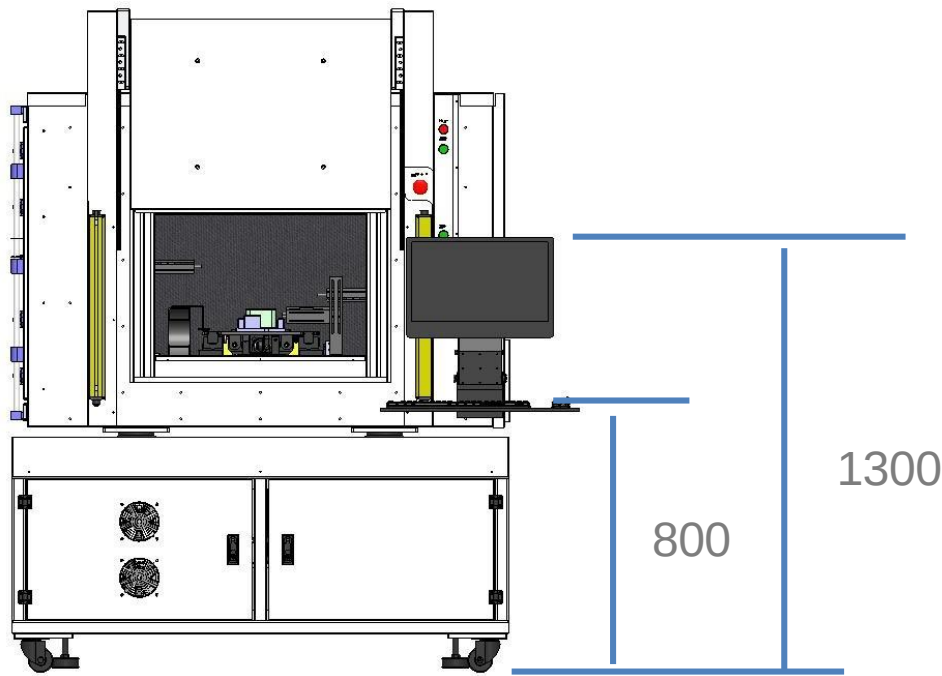
Acoustic Chamber -- rear maintenance door description

1. The rear maintenance door is replaced with a sound-absorbing tip.
2. The rear lock is locked and can be locked without maintenance.



Sound absorbing

Acoustic Chamber -- Monitor & keyboard Placement



Display bracket and keyboard bracket are integrated, as shown in the figure on the right (excluding display).

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